

An addition to the snake fauna of Victoria: De Vis' Banded Snake *Denisonia devisi* (Serpentes: Elapidae) Waite and Longman

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Abstract

In late November 2005 a survey was carried out for Common Death Adder *Acanthophis antarcticus* on Lindsay and Wallpolla Islands along the Murray River. No sighting of this species were made but a De Vis' Banded Snake *Denisonia devisi* was collected, representing the first record of the species in Victoria. Further specimens of the snake were recorded locally in other surveys, pointing to the value of baseline survey. Ongoing surveys of herpetofauna are essential and until more is known of the conservation status of De Vis' Banded Snake in Victoria, caution is recommended regarding landuse that could potentially threaten the species. (*The Victorian Naturalist* 124 (1), 2007, 33-38)

Introduction

Knowledge of the distribution of Victorian herpetofauna continues to be refined from data collected during fauna surveys and incidental records. Historical data suggest that the Victorian terrestrial snake fauna consists of some 25 species belonging to three families – Boidae, Typhlopidae and Elapidae (Coventry and Robertson 1991). However, the often cryptic habits of snakes, the distributional proximity of several apparently 'non-Victorian' species to this state, and the presence of suitable habitat for these taxa, suggests that unrecorded species may yet be found within Victoria. Here the discovery of a snake species previously unknown from the state is reported.

The Common Death Adder *Acanthophis antarcticus* is known from Victoria, having been recorded at Lake Boga by Gerard Krefft in 1856 (Coventry and Robertson 1991). However, no specimen has been collected within the state. In late November 2005 a survey for this species was undertaken on Lindsay and Wallpolla Islands along the Murray River in far north-western Victoria, following recent, unsubstantiated sightings. Over five days and three nights, a range of areas on these islands was surveyed using four techniques – raking of litter and coarse debris, rolling

of logs and rubbish, deploying a sniffer dog ('Gus', a 10 month-old Beagle trained to detect Death Adders) on a lead, and spotlighting after dark using vehicle headlights and hand-held spotlights. We focused on Lignum and River Red Gum habitats because the local Death Adder sightings had occurred in these vegetation communities.

Death Adders were not detected during this survey, but on the final night a De Vis' Banded Snake (also known as a 'Mud Adder') *Denisonia devisi* was collected, representing the first record of the species in Victoria. Subsequent trips to the same and nearby areas have resulted in further records of De Vis' Banded Snakes

Observations

On November 25, at 11.10 pm (Eastern Daylight Saving time), whilst spotlighting beside a waterbody on Dedman's Track in River Red Gum forest in Wallpolla Island State Forest, approximately 800 m south of the Murray River, the first De Vis' Banded Snake was found. The area had been subject to recent earthworks involving channel and levee modification, and had received pumped water over previous months. The weather was cool and overcast, with no moon, and a cool, moderate breeze. The

day and evening had been hot and humid with some showers and lightning, followed by a cool southerly change about 1.5 hours before the snake was found. The temperature was not recorded at the time, but the maximum temperature at nearby Lake Victoria on November 25 was 35.5° C, and 14.5° C at 9.00 am the next day.

When first observed, the snake (Fig. 1) was stationary with its body in loose curves. It was lying on a flat log at the water's edge, approximately 15 cm from water and 10 cm above the water level. The immediate surrounding area had sparse litter with no grass or shrubs, and the nearest vegetation was regenerating Red Gum approximately 1–2 metres from the snake. Because they are known to be the preferred prey of this snake, we noted all frog species seen and/or heard nearby. Two species, Peron's Tree Frog *Litoria peronii* and Barking Marsh Frog *Limnodynastes fletcheri*, were calling from the waterbody where the snake was found.

In mid December 2005 a second survey resulted in a further five sightings of De Vis' Banded Snakes, four of which were found very close to the location of the first specimen. One of these snakes was dead and partly decayed when discovered in sparse Red Gum litter on a raised bank approximately 45 m from the water's edge. All three live specimens were close to the water's edge (0.02–3 m) and were found lying on dry, cracked clay, thick litter, and wet clay respectively. The second of these individuals was collected and subsequently lodged as a voucher specimen at Museum Victoria (specimen number NMV D74160; Table 1). Frog species recorded at the sites where these snakes were found included Peron's Tree Frog, Barking Marsh Frog, Plains Froglet *Crinia parvinsignifera* and Spotted Marsh Frog *Limnodynastes tasmaniensis*. The last De Vis' Banded Snake found on this survey was recorded on the bank of Potterwalkagee Creek, more than 40 kms west of the previous records. The anterior half of this snake was hidden in thick, wet Red Gum litter approximately 10 cm from the water's edge under a Red Gum tree. The only frog species recorded at this site was Peron's Tree Frog.

A third survey trip in January 2006 resulted in another three records of De Vis'

Banded Snakes from the western end of Horseshoe Lagoon on Wallpolla Island. These snakes were all found on bare, cracked clay within 3 m of the water's edge. Two were found on the bank of a lagoon, and one on the bank of a channel, and all were in habitat with sparse River Red Gums and *Typha* thickets nearby. Frog species recorded nearby included Barking Marsh Frog, Spotted Marsh Frog, Peron's Tree Frog and a Growling Grass Frog *Litoria raniformis*.

Frog surveys led by Sharada Ramamurthy (Mallee Catchment Management Authority) in February and April 2006 resulted in observations of another three De Vis' Banded Snakes (specimens 10–12 in Table 1) in the region, but these were not captured and there is no morphometric data for them. The first of these snakes was found in cracks in the clay substrate of a drying lagoon, approximately 200–300 m from water. The lagoon was fringed by River Red Gums, although the immediate location of the sighting had almost no leaf litter. Frogs detected at this site included Growling Grass Frog and Barking Marsh Frog. The second snake was found moving through sparse herbaceous vegetation on a clay lagoon bank with medium to dense leaf litter, approximately five metres from water. Nearby habitat consisted of numerous River Red Gums with coarse, woody debris beneath. Three Growling Grass Frogs and three Barking Marsh Frogs were observed nearby. The third snake was found moving through leaf litter on the bank of a wetland approximately seven metres from water. The immediate area had a medium cover of leaf litter, sparse herbaceous vegetation and River Red Gums over a layer of coarse, woody debris. Several Peron's Tree Frogs were observed nearby.

Available morphometrics of these snakes are presented in Table 1. Apparent signs of sexual dimorphism permitted the tentative assignment of sex presented in the last column. Snakes believed to be females had tails that tapered uniformly from the vent, with no signs of hemipene bulges, and their tails were usually noticeably shorter (with less subcaudal scales) than the snakes considered to be males. Similarly, two of the three snakes considered to be females had

Table 1. Collection and morphometric details of De Vis' Banded Snakes *Denisonia devisi* from north-western Victoria. Time is Eastern Daylight Saving time. Temperatures in parentheses were not recorded immediately at the time of observation. Length is given in millimetres, weight in grams. In all specimens the anal scale is single. Specimen 3 was dead and partly decayed when found.

Specimen number	Collection date, time and ambient temperature	Locality	Snout-vent length	Tail length	Weight	Mid-body scale rows	Ventral scales	Subcaudal scales	Likely sex
1	25 November 2005, 2310 hrs	'Lillyponds', Wallpolla Is.	354	44	32	17	134	24, all single	Female
2 (specimen lodged with Museum Victoria)	13 December 2005, 2305 hrs, 22.1°C	'Lillyponds', Wallpolla Is.	334	59	22	17	129	32, first divided, rest single	Male
3	14 December 2005, 1200 hrs	'Lillyponds', Wallpolla Is.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	15 December 2005, 2225 hrs, 24.9°C	'Lillyponds', Wallpolla Is.	336	43	22	17	136	26, all single	Female
5	15 December 2005, 2230 hrs, 24.9°C	'Lillyponds', Wallpolla Is.	322	41	25	17	134	26, all single	Female
6	16 December 2005, 2240 hrs, 22°C	Potterwalkagee Creek, ~1 km downstream of old Ned's Corner pumphouse	371	51	23	17	128	33, first divided, rest single	Male
7	21 January 2006, 2229 hrs, (36.5°C at 2245 hrs)	Western end of Horseshoe Lagoon, Wallpolla Island	286	46	17	17	128	33, first divided, rest single	Male
8	21 January 2006, 2245 hrs, 36.5°C	Western end of Horseshoe Lagoon, Wallpolla Island	N/A – snake not captured	N/A	N/A	N/A	N/A	N/A	N/A
9	21 January 2006, 2256 hrs, (36.5°C at 2245 hrs)	Western end of Horseshoe Lagoon, Wallpolla Island	N/A – snake not captured	N/A	N/A	N/A	N/A	N/A	N/A
10	14 February 2006, 2319 hrs, (24.2°C at 2325 hrs)	South-eastern end of Snake Lagoon, Mulera Island	N/A – snake not captured	N/A	N/A	N/A	N/A	N/A	N/A
11	24 February 2006, 0022 hrs, (29.7°C at 2335 hrs, 23 February)	South-eastern end of Snake Lagoon, Mulera Island	N/A – snake not captured	N/A	N/A	N/A	N/A	N/A	N/A
12	14 April 2006, approximately 2100 hrs, estimated 10–15°C	Western end of Potterwalkagee Creek, Mulera Island	N/A – snake not captured	N/A	N/A	N/A	N/A	N/A	N/A

three to four bulges in the posterior half of the body, suggesting that these specimens were gravid. These apparent differences between the sexes coincided with a divided first subcaudal scale in those considered to be males, whereas this scale was single on those considered to be females. Lastly, these characters suggest that the specimen that was lodged at Museum Victoria would be a male. Subsequent examination of the post-anal musculature and probing of probable hemipenis pockets of this specimen confirmed that it was a male (J Melville pers. comm.).

Discussion

These are the first records of De Vis' Banded Snakes from Victoria, and represent a significant south-westerly range extension for this snake. The species' previously known range was north-central New South Wales extending north into south-central Queensland, closely associated with the riverine habitats of the upper Darling River system. The late Charles Tanner spoke of an observation he made around 40 years ago of a De Vis' Banded Snake some 100 km north of Wentworth, New South Wales (pers. comm. to AJC), and more recently PR received a report of a juvenile from the vicinity of Wentworth. These two observations have been treated with some reservation, but the records presented here apparently validate these earlier reports. A recent sighting of a Common Death Adder on Wallpolla Island now seems erroneous and, after checking with our photographs of De Vis Banded Snakes from Wallpolla Island, is more likely to have been this species (J Dzuris pers. comm. to NC). Consequently, it is conceivable that De Vis' Banded Snake not only occurs in the floodplain environs of far north-western Victoria, but also those within the Darling River catchment in central and southern New South Wales.

The closest official records of De Vis' Banded Snake are more than 500 km distant (in the vicinity of Bourke, New South Wales; Swan *et al.* 2004), with only a couple of unsubstantiated sightings (above) of the species in the south-west of that state. Interestingly, the species has not been detected during several recent fauna surveys that sampled riverine habitats in the

lower reaches of the Murray Darling catchment in Victoria and New South Wales (Robertson *et al.* 1989; Coventry 1996; Val *et al.* 2001; Brown *et al.* 2003; Robertson and Silveira 2005, PR unpubl. data). The discovery of this snake in Victoria suggests that commonly used reptile survey techniques may easily miss this species. De Vis' Banded Snakes inhabit cracking, clay-based soils on alluvial flats (Wilson and Swan 2003), a habitat that is frequently avoided during pitfall trapping (the most commonly applied technique in the studies listed above) because of the difficulty of digging in these types of soils, and the problems associated with flooding of the traps. De Vis' Banded Snake is a nocturnal, frog-eating species (Shine 1983), and is perhaps best surveyed by spotlighting wetland habitats close to the water's edge during the warm, humid and/or rainy conditions favoured by their prey.

Despite the studies listed above, this part of far north-western Victoria (as well as adjacent parts of New South Wales and South Australia) has not been surveyed thoroughly. The records presented here, and the results of other recent studies (e.g. Clemann *et al.* 2005), demonstrate that baseline surveys frequently provide valuable information and significant new data on notable species. Consequently, we recommend that government agencies and management organisations continually strive to refine their understanding of species' distributions. Furthermore, recognising that landscapes and habitats are dynamic and continually changing, repeat surveys over time will be necessary if we are to understand changes in species' occupancy and distribution, and the reasons for these changes.

The observations on the morphology and habitat use of these Victorian De Vis' Banded Snakes conform to those previously recorded for the species in Queensland and New South Wales, with snakes occurring in floodplain habitat with deep alluvial clays and riverine woodland vegetation (see Cogger 2000, Wilson and Swan 2003, Swan *et al.* 2004). Similarly, these Victorian specimens were found at night close to the edge of wetlands with abundant frogs. This is in accord with the nocturnal, frog-eating habits of the snake pre-

viously reported in the literature (Shine 1983). The apparently gravid condition of some of these snakes suggests an early spring mating period, in accordance with specimens from New South Wales and Queensland (Shine 1983).

The morphometric and scale count data that we recorded are within the ranges presented for this species by Greer (1997) and Shine (1983). However, the observation of divided first subcaudal scales in specimens that were apparently males has not been noted previously. The consistency of this trait amongst Victorian specimens, and whether this feature has been overlooked in specimens from other states, remains to be confirmed.

Reed and Shine (2002) identified ecological correlates of threatened status amongst Australian elapid snakes, and suggested that De Vis' Banded Snake, although not listed as threatened, exhibited traits typical of other, threatened species. Considering the then known distribution and status of the species, Reed and Shine (2002) interpreted the inclusion in their analyses of this species with officially threatened taxa as perhaps being pre-emptive (i.e. they suggested that De Vis' Banded Snake, and several other species, may be sensitive to threatening processes, but were yet to manifest such sensitivity). Our discovery of what may be a small and isolated population of this species suggests that this interpretation of Reed and Shine (2002) may be prophetic, and should heighten concern for the conservation of De Vis' Banded Snake in Victoria. Consequently, we suggest that a thorough appraisal of the species' status in the area is needed, and a precautionary approach to protecting its habitat and that of its amphibian prey be adopted.

Until such time as adequate research is conducted to determine the ecological and conservation requirements of De Vis' Banded Snake in Victoria, it is recommended that potentially threatening activities, particularly cattle grazing, logging and firewood removal, be controlled, and their effects monitored, in riverine habitats in the north-west of the state. Removal of these potentially threatening processes also would benefit the conservation of other threatened snake taxa in the region, including the Red-naped Snake *Furina diadema*, Curl Snake

Suta suta and Inland Carpet Python *Morelia spilota mectalei*. These species occur in the area in which the De Vis' Banded Snakes were recorded (Coventry and Robertson 1991; Atlas of Victorian Wildlife database), and in similar broad habitats, suggesting that riverine habitats in north-western Victoria are important for snake conservation in this state.

Surveys of herpetofauna should be an essential ongoing component of biodiversity conservation programs in Victoria. There are other snake species not recorded in Victoria that occur tantalisingly close to this state, and, as suggested by Coventry and Robertson (1991), some of these yet may be detected during targeted surveys.

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Woodlands: a disappearing landscape

by David Lindenmayer, Mason Crane
and Damian Michael

Photographs by Esther Beaton
With contributions from Christopher
MacGregor and Ross Cunningham

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The wonderful woodlands of south-eastern Australia are not at the forefront of people's minds when conjuring up images of Australia's world-renowned natural environment.

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structural components of the woodlands, paying attention to many different aspects of the woodlands, both biotic and abiotic. This book takes you from the canopy to the ground layer, exploring the world beneath the bark of ancient gums, the cool mud of swampy wetlands, and the fine construction of a Willie Wagtail's nest. As soon as you read this beautifully presented special interest book you'll be planning your next picnic or bushwalk.

This book targets a wider audience than the scientific community – it has its roots in science, but appeals to the general community through the use of stunning photographs, diagrams and easy to follow chapters and subheadings. My favourite photo is of a Cunningham's Skink basking on a rock beneath a brooding stormy sky (page 81).